

Lower Incidence of Persistent Intramural Thrombus in SES Coated with Absorbable Polymer Compared to Cypher: Angioscopic and Histological Evaluations

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Background: Chronic inflammation and hypersensitivity reactions induced by permanent polymers used in current drug-eluting stents (DES) may contribute to late thrombosis and restenosis. We evaluated a novel sirolimus-eluting stent coated with bioabsorbable salicylate-based polymer.

Methods: Durable polymeric sirolimus-eluting stent (Cypher, n=26) and bioabsorbable salicylic acid/adipic acid polymer coated metal stent containing sirolimus (SA/AA+S, n=32) were randomly implanted in pig coronary arteries using QCA to optimize stent apposition. Angioscopic and histological grading of intramural thrombus and intimal thickness were assessed at 1 and 3 months post implantation.

Results: At 1 month, there was no significant difference between Cypher and SA/AA+S in terms of angioscopic and histological intramural thrombus grading (P=0.100). Histological neointimal thickness was similar between the groups at 1 and 3 months (1M: Cypher 0.19±0.19mm, SA/AA+S 0.10±0.06mm, P=0.25; 3M: Cypher 0.33±0.20mm, SA/AA+S 0.36±0.27mm, P=0.79). From 1 to 3 months, the angioscopic grading of intimal thickness increased in both groups. Accordingly, the angioscopic grading of intramural thrombus beneath thick neointima was decreased in both groups. However, histology revealed that intramural thrombus was persist at 3 months without change from 1 month in Cypher group, while significantly decreased in SA/AA+S (P<0.001).

Conclusions: Sirolimus-eluting stent coated with novel bioabsorbable salicylate-based polymer showed lower levels of histological intramural thrombus at three months post implant compared to Cypher stent.